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ORNAMENTAL IRON-WORK.*

By Mr. Jacob Falke.

In the course of the seventeenth century other decorative treatments of Iron-work supplanted etching which gradually fell into disuse. The design was sometimes engraved into the metal; but especially thin, pierced ornamental plates were frequently employed for the enrichment of the flat surface; of iron in the first instance, they were afterwards of polished brass, when outward show and brilliancy instead of simple beauty in art were aimed at. These decorative devices were not relief-work but merely surface ornament; raised leaves and flowers are however found, although embossed from very thin sheets of malleable iron, thereby deficient in point of solidity.

During the development of smith-work, the craft of the armourer had produced works of art of the highest excellence and perfection. There were genuine artists, many of great renown, who during the sixteenth century devoted themselves to the manufacture of armour in Milan, Augsburg and many other places. The real problem was indeed to make the cuirass shot-proof; but these heavy pieces being only worn in war, rich noblemen and princes had splendid suits of lighter make for state occasions, wrought with great art, and showing most elegant and beautiful enrichment, their other arms and pieces of ornament being of corresponding richness.

There were, technically speaking, three entirely different styles of decorative treatment. First the etching above mentioned, the development of which may be attributed partly to the etched plates of Albert Dürer. Suits of armour with ornamental and figured etching dating from his time, are to be met with which remind us of his style and treatment. The devices are of exquisite beauty and elegance in detail, but viewed as a whole from a certain distance they make too little outward show, being less gorgeous in appearance, for which reason they used to be enhanced with rich gold ornaments. Etchings were frequently applied also to sword-blades and to shields, as long as these were in use.

The second, more difficult mode of ornamentation consisted of hammered or *repoussé* and chased work. In the beginning merely channels or flutings were punched into the steel, producing by their polish the brilliant reflection of light and shade. But as early as in the first half of the sixteenth century the most delicate raised work, such as only the highest refinement of art of the period could produce, was resorted to for the enrichment of the armour and harness of knight and steed, covering them with reliefs of the greatest beauty and perfection of workmanship. Historical and mythological subjects, ornaments with masks, fantastic or real figures, and similar types or features of the Renaissance were hammered and chased in steel and iron, sometimes with as much perfection as if modelled in wax. Our art-collections exhibit many specimens of that high perfection of workmanship for which the productions of that epoch, especially Augsburg work, are justly renowned. Partial gilding was often combined with this otherwise solid and truly genuine style of art-workmanship; but it must be considered an aberration, and an exaggerated gorgeousness for these suits of armour to be entirely

* See p. 225 *ante*.

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gilt. In this case the chasing is also generally less perfect, and it is not much to be regretted if the brilliant polish of the gold has to atone for the deficiency in artistic value.

A third style of ornamentation, decidedly of Eastern origin, and suggested by the arms captured in the Turkish wars, or acquired by commercial intercourse with the East, was introduced by the armourers and swordsmiths; such specimens being, even at that date, in great favor amongst soldiers and art-collectors. It consisted in the damascening (*tausio*) i. e., incrusting of one metal on another, generally gold or silver on iron or steel. The precious metal, according to the drawn or engraved pattern, hammered into the heated, common metal, was often applied in such thin sheets as to appear like mere gilding. Still such a supposition would be very erroneous, only genuine, solid gold or silver being used for such decorative treatment, for which reason their brilliancy and rich effect have remained untarnished, unless injured by rust, causing it to scale off.

The ornaments also thereby in use are Oriental motives, borrowed, with the *technique* itself, from their armour. They show the charming arabesque-work of ancient Eastern art, the graceful play of interlaced bands and lines, interspersed with leaves and flowers, which, being adopted by the armourer, soon found their way to the workshop of the gold-smith and the studio of the illuminator; or they adorned book-covers and mounts, as well as the productions of many an other craft. Even in modern decoration we can trace their influence although often devoid of their original character. The boss or umbo of the shield, the helmet, the plates of the armour, the hilt-knob and blade of sword and poniard, especially on their under parts, were profusely covered with these elegant arabesques in charming arrangement, they being generally applied wherever a suitable surface for their display presented itself. If some difference can be discerned in the ornamentation of the productions of Eastern and Western origin, it is that oriental motives (see fig. 4) present a close design, with the general effect and repose produced by a quiet pattern, while the European work is marked by a bolder design of the main features on a broad ground, both which characteristics may be seen combined in the Hungarian state armours.

In the second half of the sixteenth century those three styles of decorative treatment were sometimes combined; damascening, especially, was united with *repoussé* work, chased figures, representing e. g., knights in armour, being suitably enriched with incrusted gold ornaments. They were also adopted for objects of art for domestic use, chests and caskets being covered with them. We would mention here as a typical specimen a large iron desk, now in the possession of the Vienna treasury, the work of the Italian artist Joseph de Vici, engaged in the service of the Emperor Maximilian II. of Austria and dated 1569. The model and precursor of our modern strongboxes, it is a unique specimen of its kind, enriched with ornament of unsurpassed beauty and elegance. The iron case forms an architecturally designed framework for niches and compartments with chased iron figures, damascened gold and silver ornament filling the intermediate spaces and especially the interior.

A fourth style of armourer's work, which originated about the same time, must not be passed over. We refer to the chiselled knobs and basket-hilts of swords and poniards, many excellent specimens of which are still extant. The technical difficulties and the amount of trouble incurred by this style, caused it to be restricted to the above objects, or at best it was used for the enrichment of costly guns, the locks of which were, however, generally adorned with engraved figures and ornaments, sometimes also with damascening.

All these modes of decoration were in use at the beginning of the seventeenth century, which still furnished some excellent works, although not quite equal to the splendid specimens of the sixteenth, from which time the decline of the art must be dated. Real armour had already become rather useless in the course of the first half of the seventeenth century, and art ceasing to attach any value to it, the craft itself, being found to be unremunerative, as a natural consequence began to decline. It might not seem to follow of necessity that the manufacture of other arms, principally swords and fire arms, would have to suffer too; still this was the case, for they decidedly deteriorated in an artistic sense, and thus the three principal styles of decorative treatment fell out of fashion while gilding and blue damascening usurped their place.

In the East only, artistic Iron-work preserved its influence in all directions, although somewhat defective in design and execution. It is very difficult to find modern Eastern arms, which can compete, with regard to art and the purity and beauty of damascening, with the old weapons which we frequently meet with. It is true the Japanese make chiselled steel-hilts with little figures and ornaments in relief, wrought with extraordinary skill but baroque in taste; but Indians must certainly be ranked highest, not only for their gold-damascened shields, helmets, sword-hilts and blades, but also for all sorts of iron vases, caskets and utensils with inlaid goldornament, the fine goldfillets showing delicate relief. Notwithstanding the profusion of goldlines, the design being always quiet and clear, these works are most charming in effect with their ever-varying golden hue inimitable by any gilding.

The Indians are equally successful now with silver ornamentation, the style of work being quite the same as that employed for the enrichment of the Merovingian tombs, above mentioned. It consists of delicate sheets of silver, incrusted on iron according to the design, and applied to all sorts of objects, i. e., arms, and utensils,

Fig. 4.

Damascened gold arabesques on the blade of an Indian poniard.

Sixteenth century.

Fig. 5.

Iron Bottle with incrusted silver ornament. Indian Biddra-work.

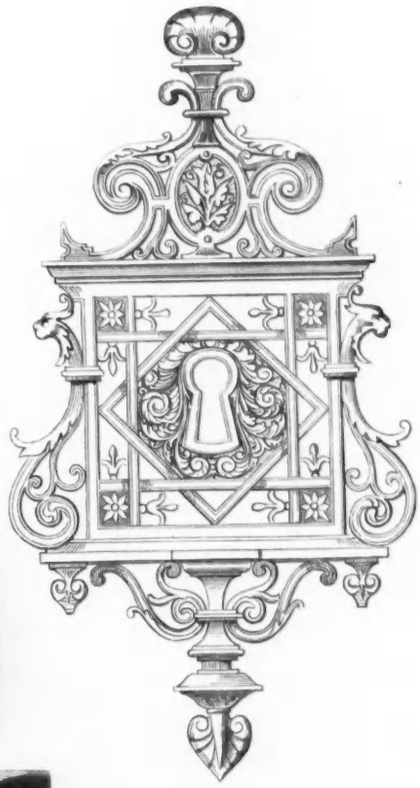


Fig. 6.

Chiselled steel-lock. Recent work; M. Huby, Paris.

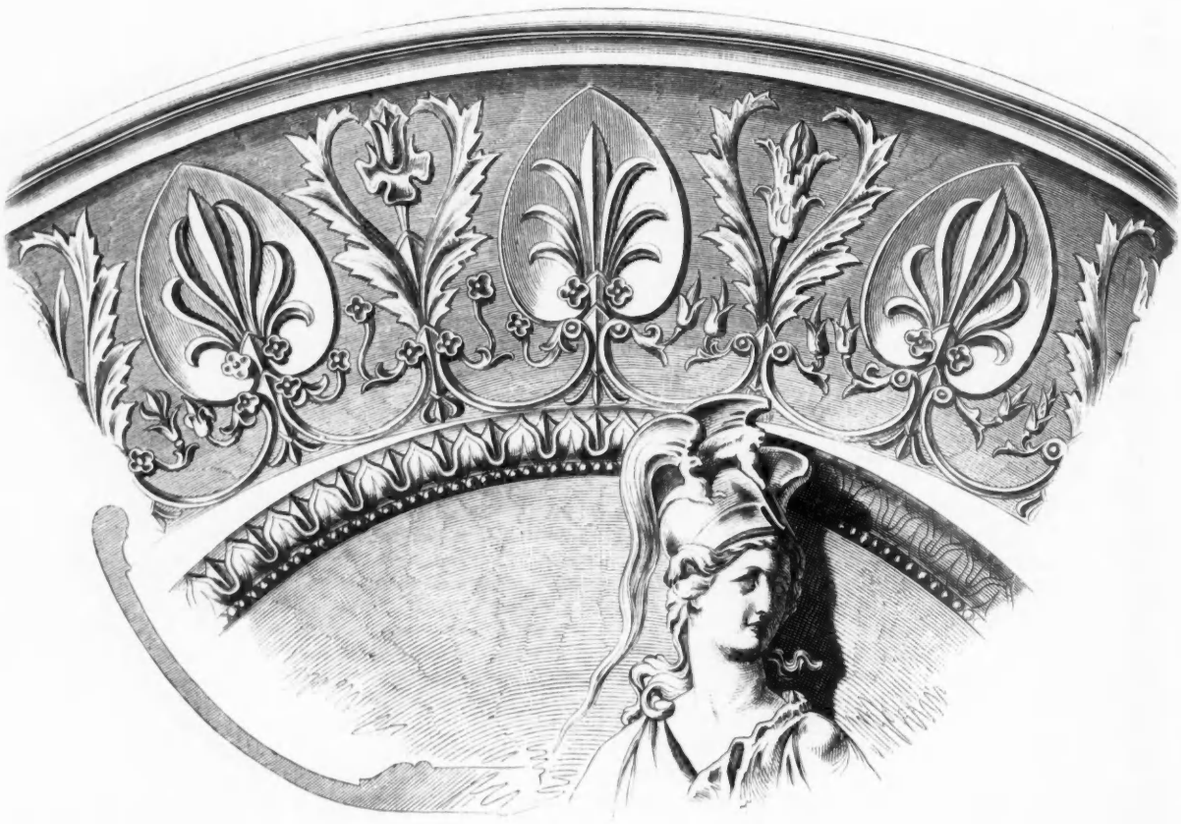
especially the bulbed vessels for hookahs with mounts made of a black alloy of iron-like appearance; the effect of the silver incrustation on black ground being very noble and elegant (see fig. 5). The Persians, also, produce similar works and the same decorative treatment may be observed on Caucasian arms and utensils. A modification of this is the silver-ornamented iron-work of Tula, now almost forgotten, but formerly well-known by the inlaid snuffboxes imported in great numbers into Western Europe. All these productions are of Eastern origin and it is but recently that the Russians have begun to change their charming and peculiarly characteristic arabesques into Rococo scroll-work and other European motives.

Nothing can be more appropriate for our modern iron utensils than the Indian silver incrustation above referred to, instead of the common-place decoration, mostly painting, of our strongboxes, caskets, desks and similiar objects used in well-to-do households. But smaller and finer Iron-work of our time does not seem inclined to introduce damascening; an exception in this respect was seen in the Paris Exhibition in a series of objects manufactured by the firm Zuloaga in Madrid, suggested by the gold-damascened arms of the sixteenth century with their oriental motives, and which are well worthy of imitation.

Wrought Iron-work seems in return to be revived for more important objects, as gates, grilles, screens, fire-dogs, gas standards and brackets, chandeliers, etc., many English and French firms of renown having taken the subject in hand. The English productions although perhaps the most judicious, are frequently too ponderous; and the polychromal treatment seems rather strange at first sight. The French on the other hand, are somewhat deficient as to a true conventional rendering; the flowers and leaves are too thin and light, showing sometimes direct imitation of natural types, a treatment not at all in conformity with the material. The excel-

lent works of M. Huby in Paris, as displayed in the Paris Exhibition, are indeed exceptions, and from these we give the illustration of a chiselled steel-lock (fig. 6) of most perfect and elegant workmanship. Also in Germany, and principally in Berlin and Vienna the erection of monumental buildings and palaces has caused a revival of artistic wrought Iron-work. So we may hope and expect that at least this branch of the art is again progressing in the right way. Let but the more delicate work of the ancient chased and damascened arms revive once more, and with the continual intercourse of the different branches of Art-Industry the manufacture of fancy-articles may in many instances greatly profit by it, iron being often much better employed where leather or its substitutes are now inappropriately used.

SPECIMENS OF ORNAMENTATION.



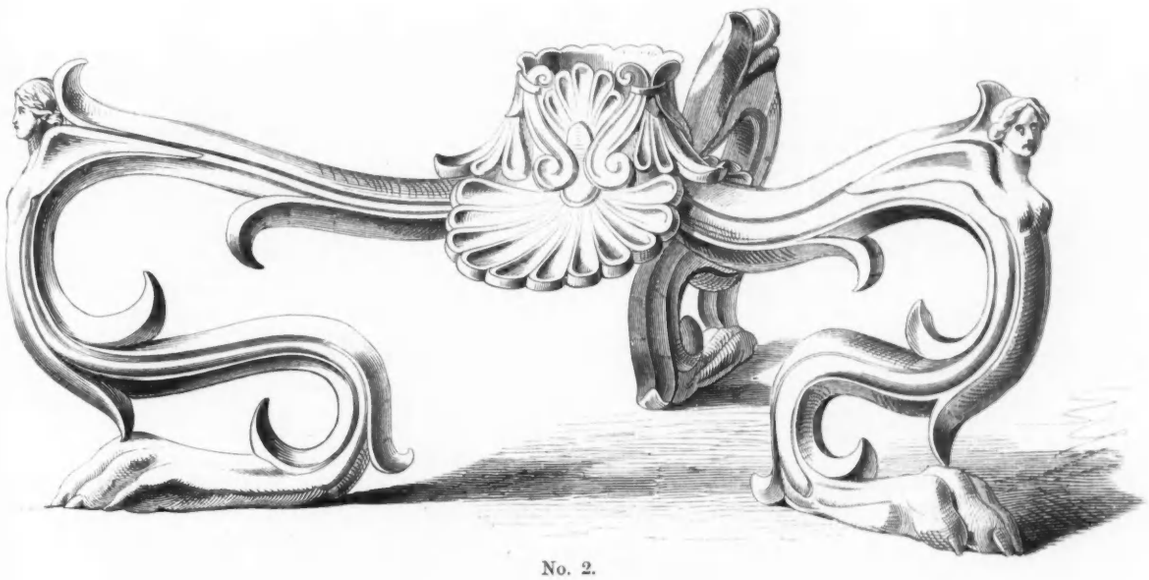
No. 1.

Nos. 1—5. Antique Silver Vessels, belonging to the treasure excavated at Hildesheim in 1868.

According to inscription, design and workmanship, of the time of Augustus, and supposed to belong to the silver plate of Varus, captured by Arminius.

No. 1. Roman Patera; real size.

The beautifully chased border ornament encircles a medallion, representing Minerva, sitting on a rock.



No. 2.

No. 3.

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No. 2. Fragment of an Antique Silver Tripod.

No. 3. Crater with handles on low foot, the body decorated with flowing bands, and wreaths of fruit and flowers; real size.

No. 4.

No. 5.

No. 4. Kyathos; or richly ornamented Antique Dipper; real size.

No. 5. Crater without handles. Real size.

The bulb enriched with interlaced laurel branches. The separation of foot and body, generally marked in Antique Craters, is not indicated here the outline showing one continual curve.

No. 6. Modern Pattern for Silk Hangings or Drapery; design white on red ground.

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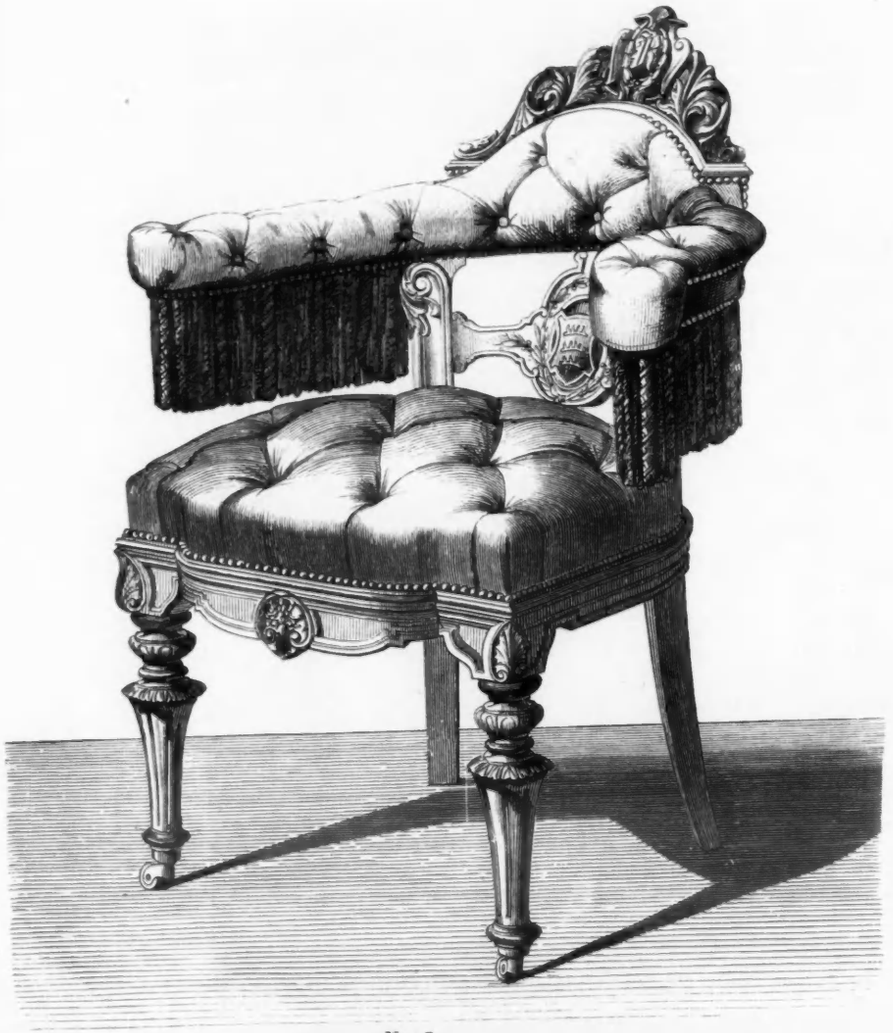
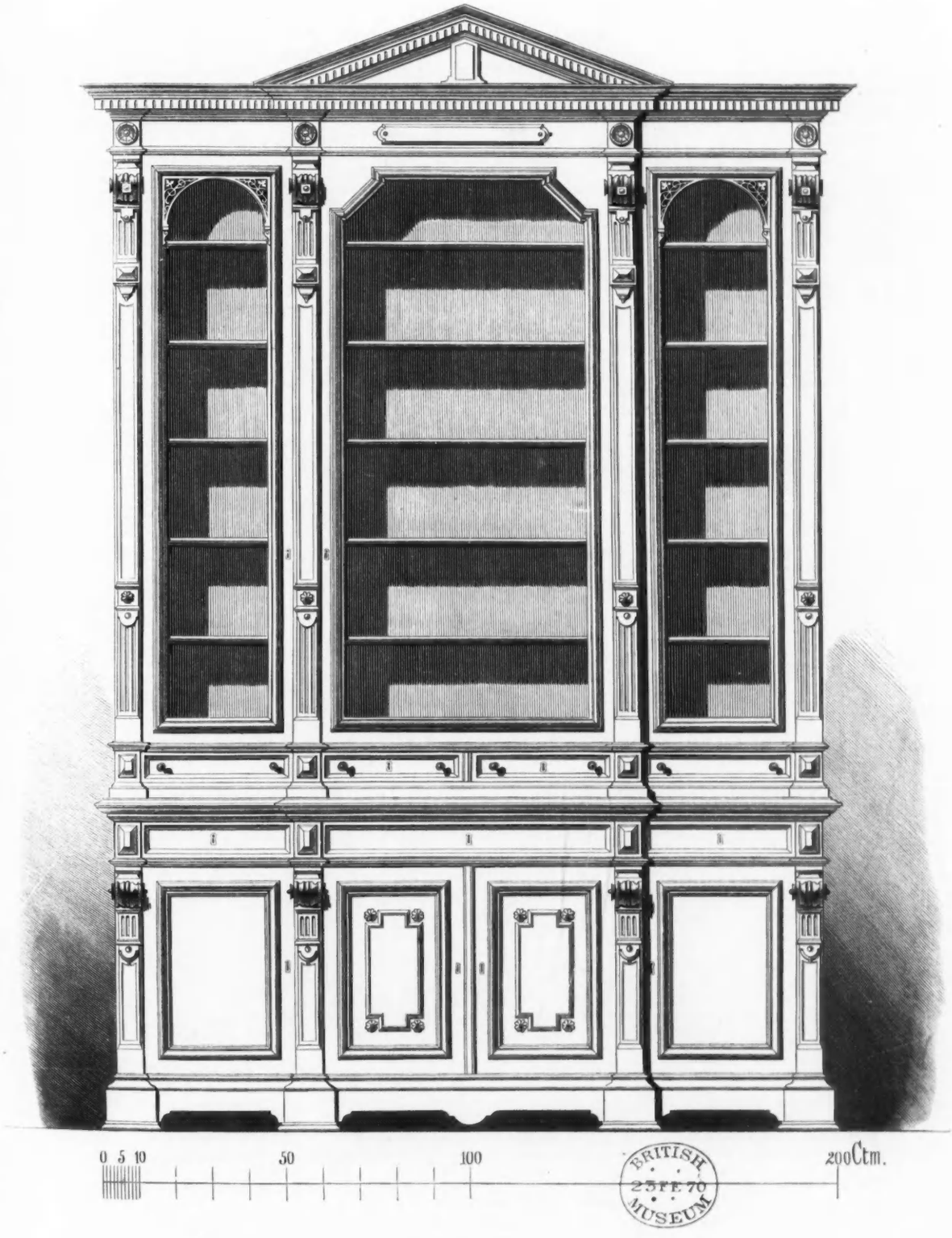


No. 7.

No. 8.

Nos. 7 and 8. Stuffed Chairs in black-stained Pear, with green Morocco coverings.
For details of No. 8 see Supplement No. 7.



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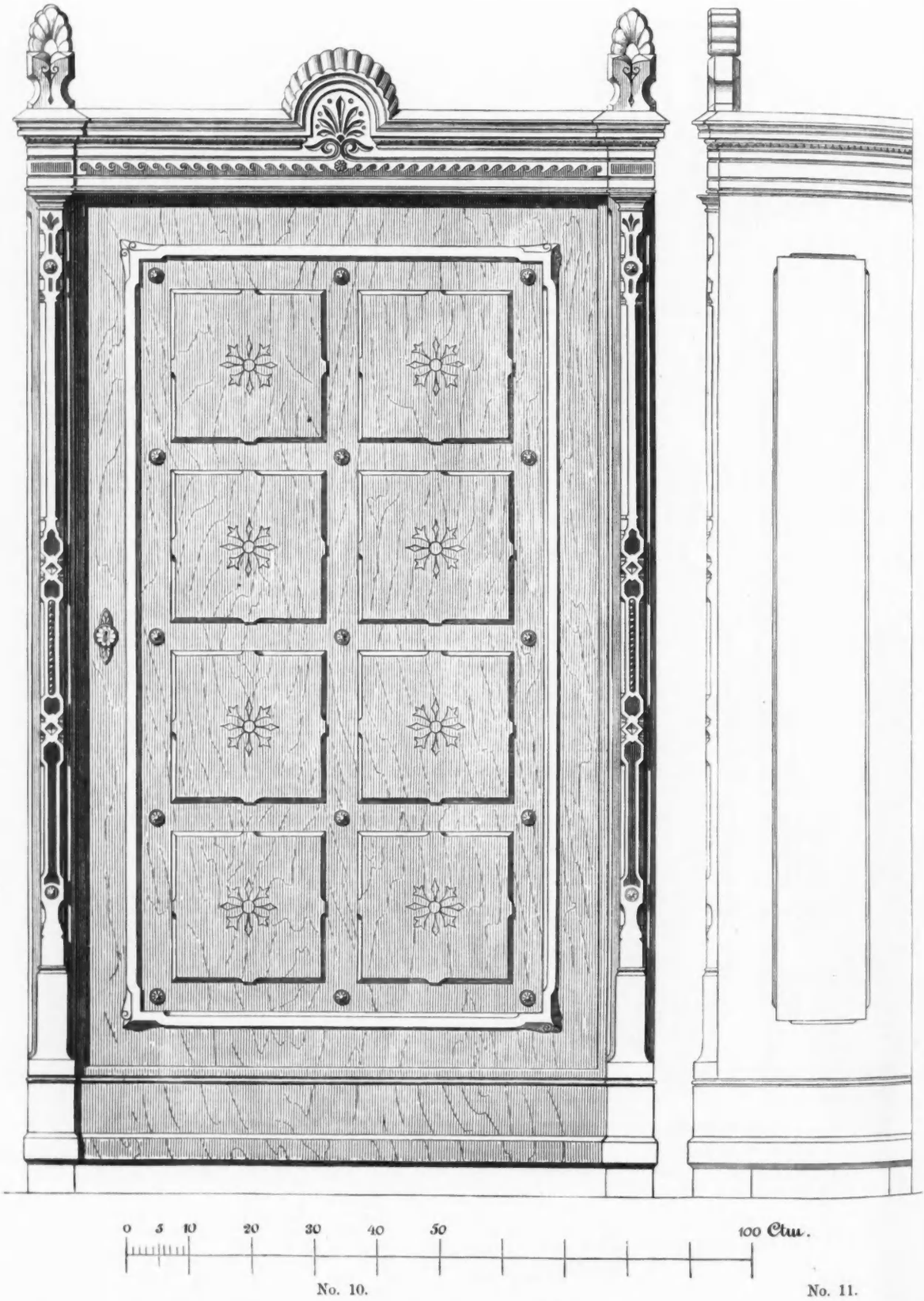
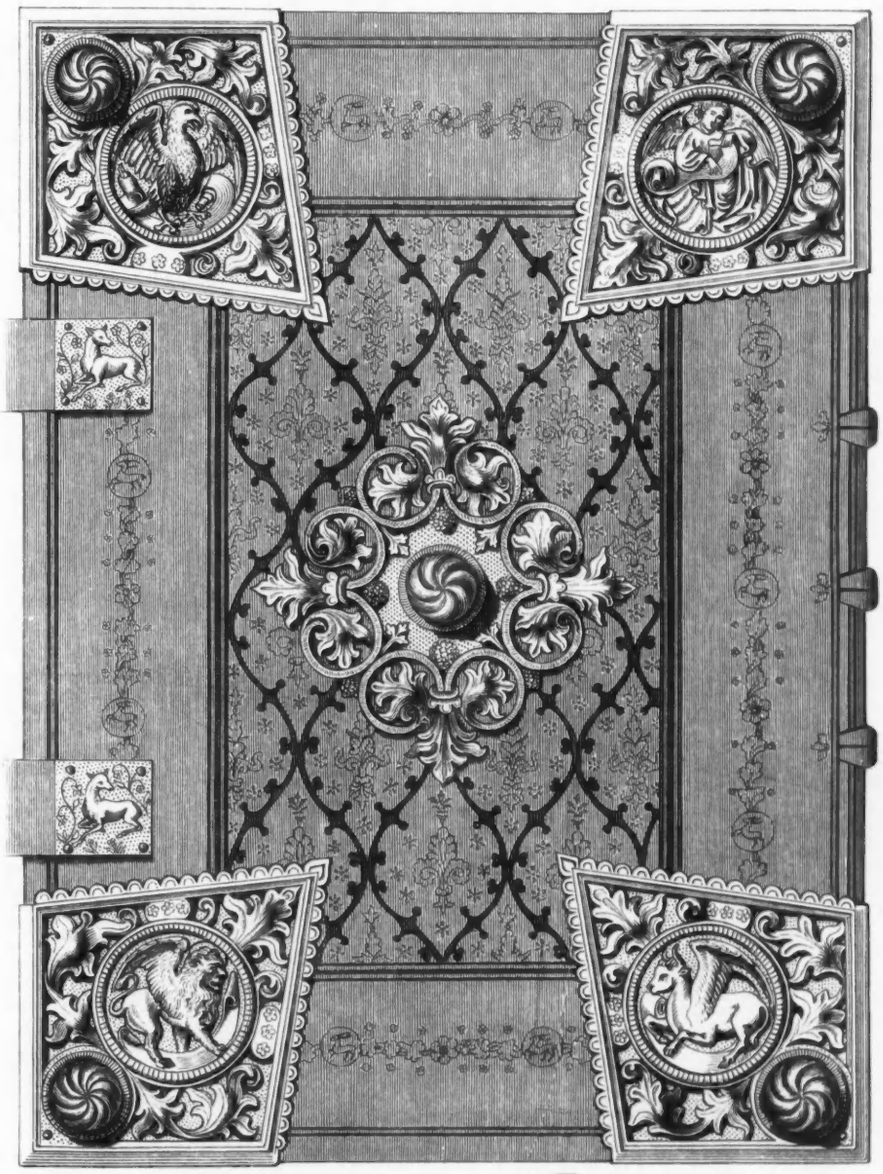
No. 9. Book-case in Purple-wood.

Of very good proportion and effect in general, although simple in design.



Nos. 10 and 11. Wardrobe; belonging to set of Bed-room Furniture represented in Part 14 and 15, and treated in the same manner. M. Rehlender, Archt.

For details see Nos. 5 and 6 of Supplement.



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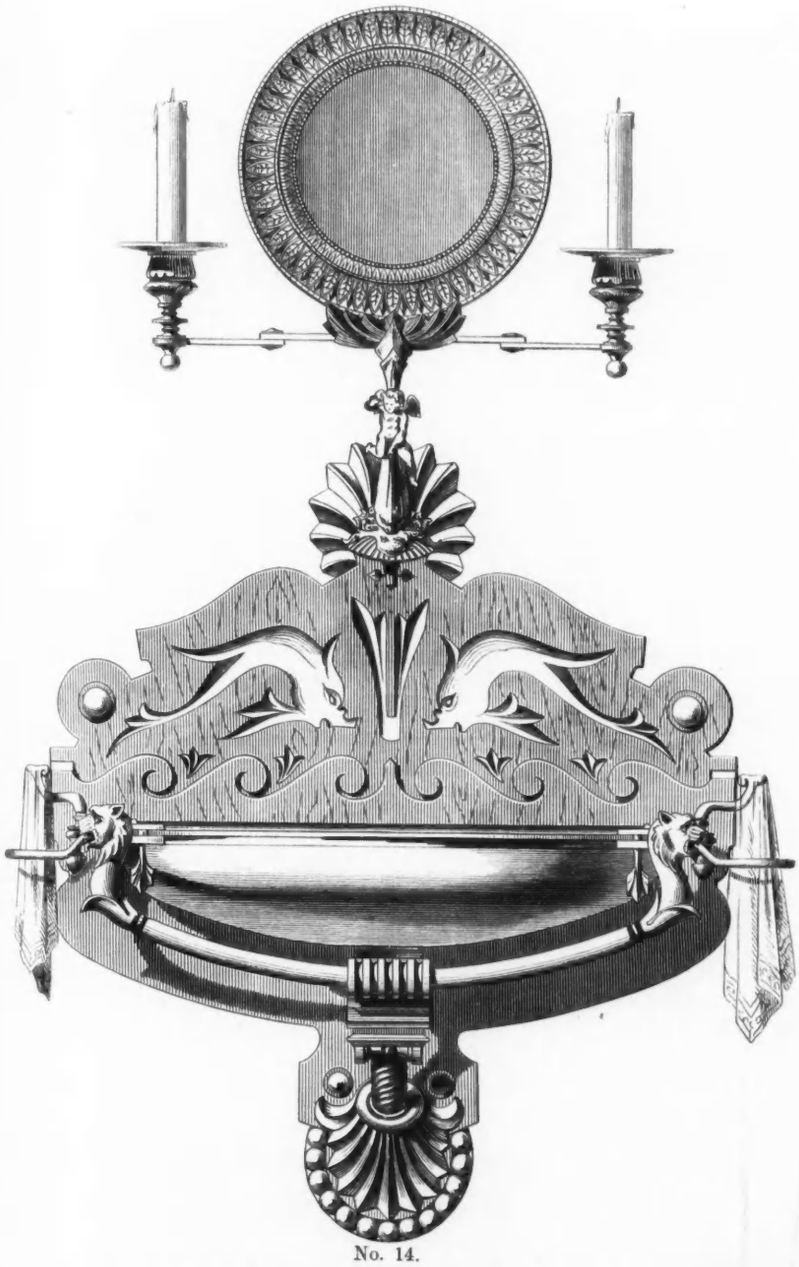
No. 12. Gothic Book-cover of a German Bible, printed in 1472. — Mr. Essenwein, Director of the Germanic Museum, Nuremberg.

No. 13. Modern Flower-Vase; with gilt brass mountings; real size.
M. P. Bénard, Archt., Paris.



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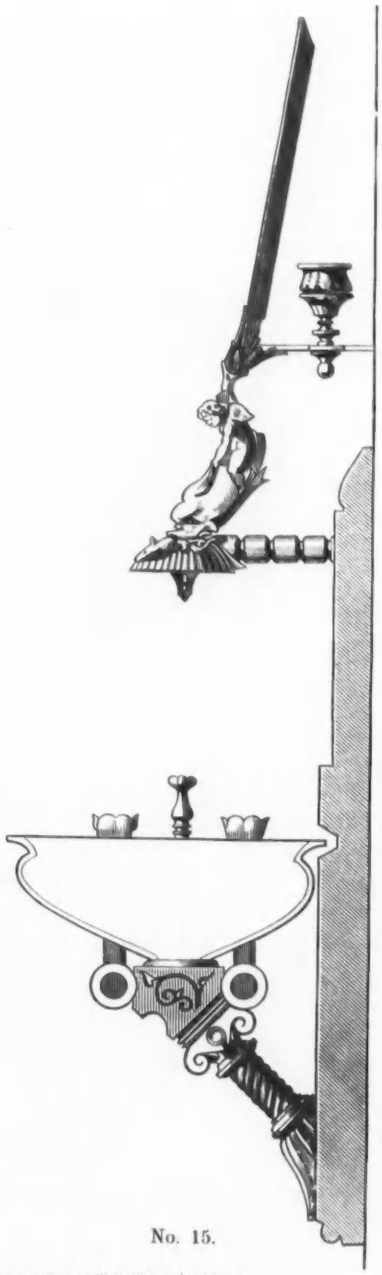

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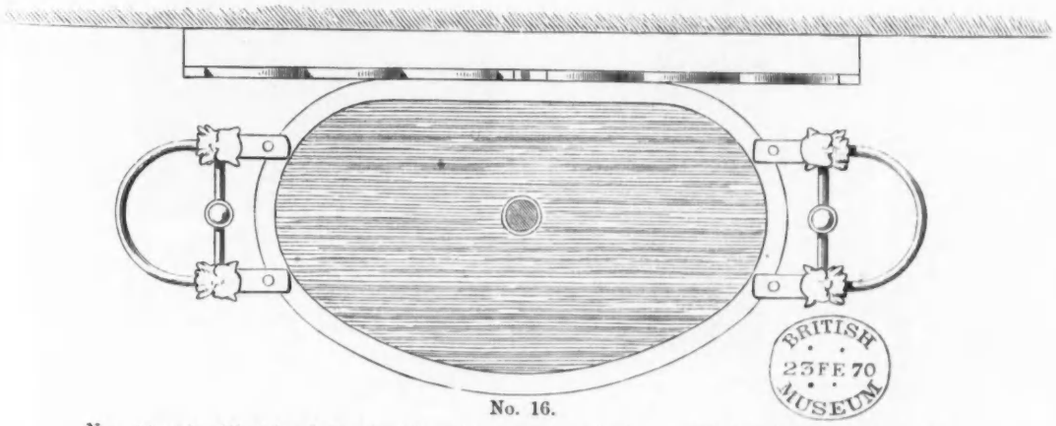

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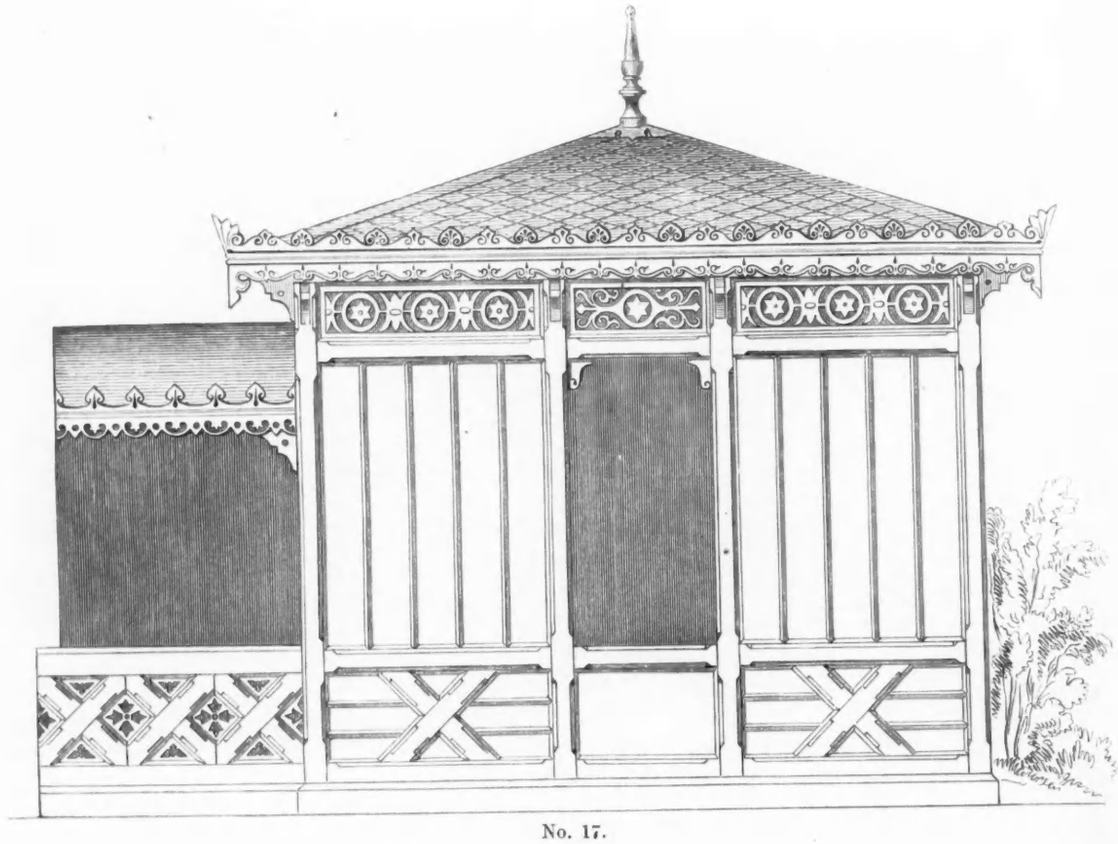
Nos. 14—16. Wash-hand Stand. Elevation, section and plan. — M. P. Bénard, Archt., Paris.

To be placed in a Lavatory or Cloak-room; the water-pipes as indicated in the designs; looking-glass between two lights surmounting the apparatus, (for which see No. 8 of Supplement), after an Antique mirror of Naples Museum; the marble slab at the back with incised ornament, painted bright-red; the bowl either porcelain or glass, everything else being bronze or other metal; rings on each side for hanging the towls.



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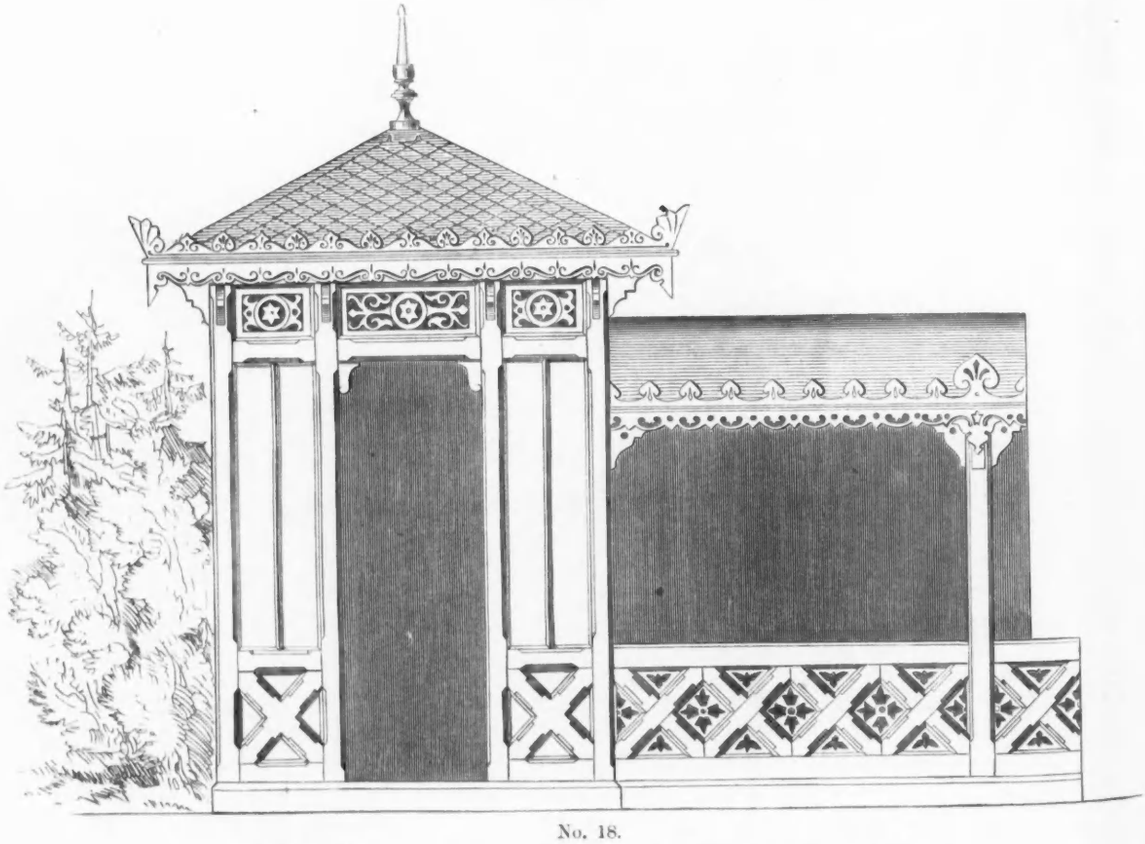

No. 18.

Nos. 17 and 18. Plans of Bowling-place. Scale $^{3}/_{100}$ full size. — Prof. W. Baumer.
No. 17 Building for the players; No. 18 that of the marker.
For ground-plan, section, and details see Nos. 1—4 of Supplement.

Nos. 19—22. Ornamental Iron-work of the sixteenth Century; Staircase Railing of the house *"zum alten Limpurg"*, at Frankfort; executed in round and flat-iron.
Scale, 1/12 full size.

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VARIOUS.

Coloring of Marble and other Building Stones.

The coloring of marble has been practised a long time, but heretofore its results have not been altogether satisfactory. It has always been considered a difficult process, and the piece of marble to be colored required great care in its selection, that it might be free from spots or veins. Heat, to open the pores of the stone so as to prepare the stone to receive the colors, has been considered essential. It is true that many of the colors used would strike into the texture of marble while cold, but they would not sink to a desirable depth and the color remained on the surface.

The colors required and the vehicles employed to convey them to the stone have been numerous and various. Horses or dogs' urine with lime and potash, lye from wood ashes, alcohol, oily liquors, spirits of turpentine, and wine, are menstruums which have given some of the best results. The coloring matters used have been drawn from the animal, vegetable, and mineral kingdoms. Among them may be enumerated, extracts of saffron, buckthorn berries, alkanet root, dragons' blood, logwood, cochineal, gamboge, vermillion, yellow prussiate of potash etc., etc.

The art of marble staining has been generally kept a secret by those who have achieved the greatest success in it, and has proved a lucrative employment.

We have said that the results attained have not proved entirely satisfactory. Either the colors have proved fugitive or changeable after a time, to as to impair the effect of the combinations in which they were placed, or the stone would not bear polishing after the process, or was only a surface color, liable to wear out when used for floors, steps or in other situations where it was liable to attrition.

The superior advantages of a method which should impregnate the entire mass, as much in the interior as the exterior, and before polishing as well as after, are too obvious to be dwelt upon.

Such a process is claimed by Dr. S. A. Weisse, who has for a long time been experimenting in this field. We have not been put in possession of the details of this process, but we are able, from personal observation to testify as to the results obtained. The stones are colored through and through, not only marble but even granite having been subjected to the process with entire success. We are informed that the process is based upon the discovery of a new mordant, which has such an attraction for stone, that when a large block has only its base immersed in the solution, it will in a short time become permeated through the entire mass, increasing its specific gravity, and filling its pores so that the absorption of water is rendered very much less when subsequently exposed to the weather than previous to the operation. When it is remembered that the absorption of water, and its subsequent expansion by frost is one of the greatest causes of disintegration in our climate, it will at once be seen that an important collateral gain is obtained by the new process. Marbles colored by this process in the rough, afterward take a most beautiful polish, and specimens of dolomite polished previous to coloring have their polish hightened by it.

An effort has been made in this process to imitate the means by which the valuable colored building stones naturally receive their color. No attempt is made to produce a given pattern, or to imitate any particular effect. The general tone of the color is produced and the variations of the tints are determined by the structure of the stone itself. In this way the effects are all natural. We have before us a piece of marble picked up in a common marble yard, of a cheap variety one side polished the other rough, which has been colored by this process, and which the best judges invariably pronounce to be genuine Sienna marble.

The colors produced include the entire range of tints, and the veins and spots which develop themselves in marble, which previous to the operation is pure white, are surprising and beautiful. The cheapest grades of stone are thus rendered ornamental and desirable, and the combinations rendered possible by this discovery must arrest the attention of architects. We do not exaggerate when we say that some of the most excellent specimens of natural stones, celebrated for their beauty, seem dull in their colors when placed by the side of those prepared by this process. Their adaptation to church architecture, as well as the adornment of private dwellings, will be admitted by all those who inspect them. *Scientific American.*

New Paints.

At a recent meeting of the French Academy, M. Sace called attention to the fact that tungstate of baryta forms an excellent white paint, which has as good a tone and depth as white lead, and has the advantage above this of not getting blackened on exposure to the atmosphere. Zinc white, which was tried as a substitute for white lead, has failed, he said, through wanting body. M. Elie de Beaumont remarked that if this statement was confirmed, it would be of great importance; for we have no need to employ special mining operations for tungsten, as this metal is commonly found in company with tin.

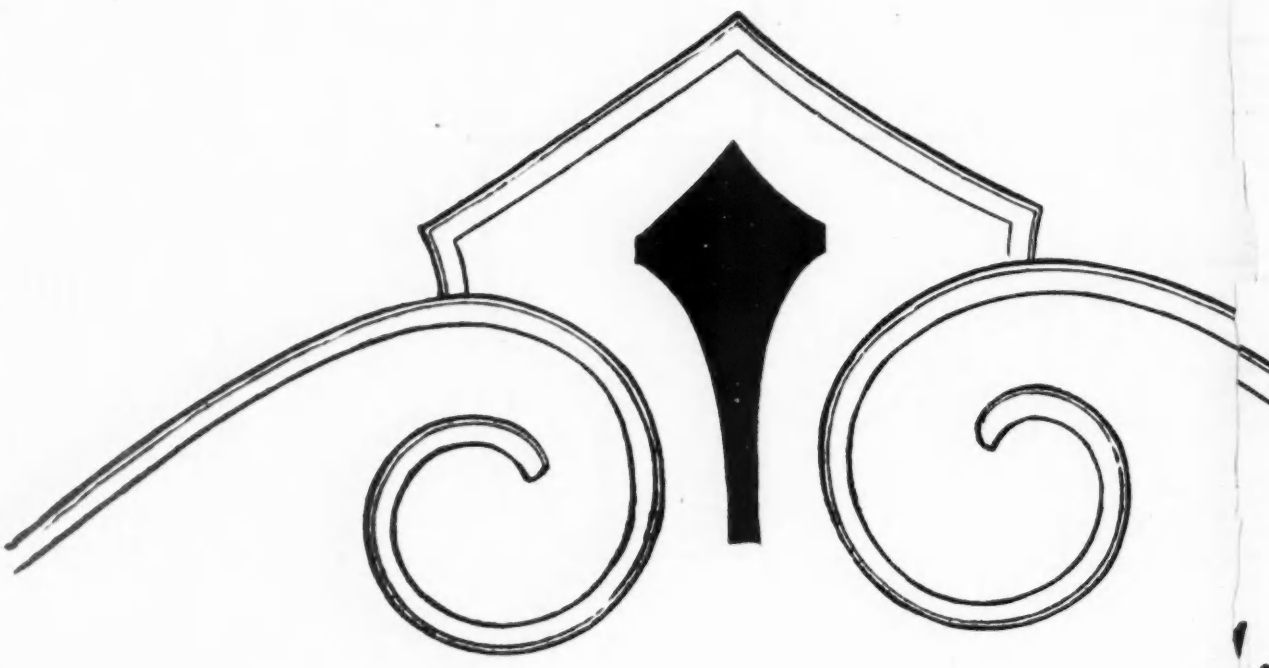
Also in the United States much interest has been excited by the discovery of a mineral which is said to possess the most valuable qualities of white lead, while superior in many respects to the manufactured article. The mine in which it has been found is situate in North Carolina, and has been worked for many years as silver and lead mine. The vein, however, presents an unprecedented variety and association of minerals. Lead, silver, zinc, copper, gold, iron, and manganese are found in the workings, which are continually varying in character. The ore usually averages about 30 per cent. of lead. The powder manufactured from the ore, when mixed with oil, it is said, forms the most durable paint known, and a yacht upon which it has been tried has been sailing for the past summer whithout coppering of any kind. The works for manufactering this powder into white lead are situate at Bergen Point, New Jersey. There is something not clear, however, in what is said as to the nature of the paint: it is said to stand a fierce heat without change. *The Builder.*

A Cheap and Good Whitewash.

Dissolve 6 lb. of fine white pipe-clay in as much water as will make it as thick as paint; soak and dissolve 1/4 lb. of good glue; add and mix well; then add 1/2 lb. of fat or dripping of any kind, put on the fire and boil a few minutes, and use while hot. The fat being boiled with the pipe-clay forms a kind of insoluble soap, which, if used while hot defies all kinds of weather. It may be colored to suit the taste. *R.*

Artificial Ebony.

This substance, now used to a considerable extent, is said to be prepared by taking sixty parts of seaweed charcaol, obtained by treating the seaweed for two hours in dilute sulphuric acid, then drying and grinding it and adding to it ten parts of liquid glue, five parts of gutta-percha and two and a half parts of India-rubber the last two dissolved in naphtha; then adding ten parts of coal tar, five parts pulverised sulphur, two parts pulverised alum, and five parts of powdered rosin, and heating the mixture to about 300 degrees Fahrenheit. We thus obtain, after the mass has become cold, a material which, in color, hardness and capability of taking a polish, is equal in every respect to ebony, and much cheaper. *Scientific American.*



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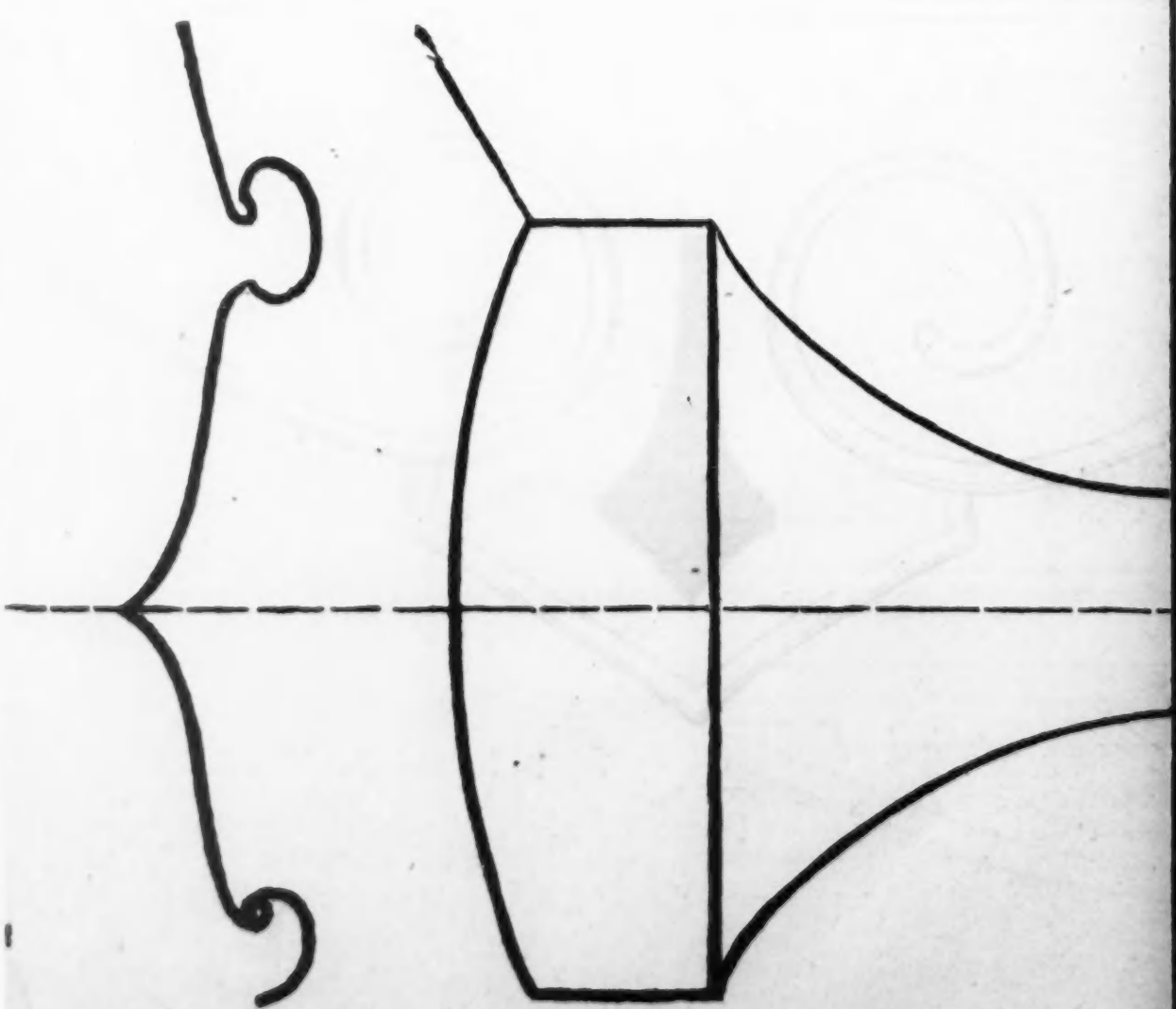

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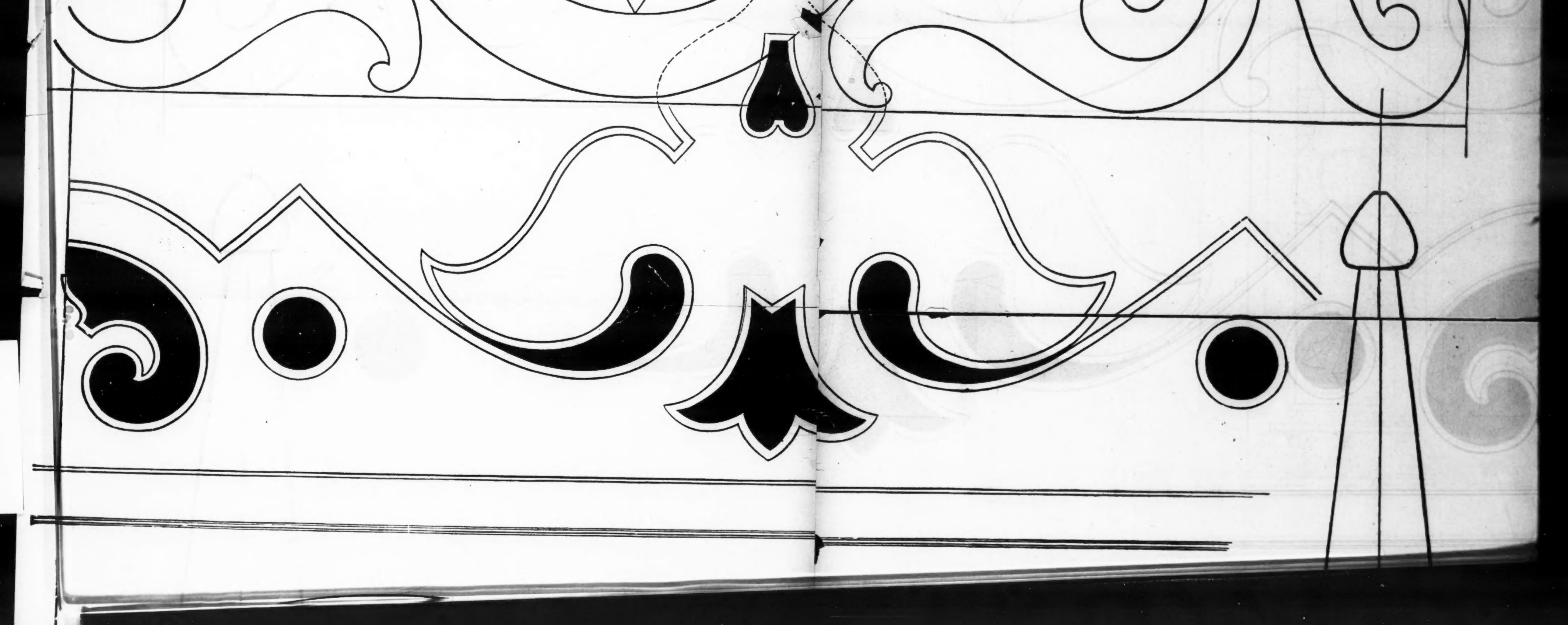

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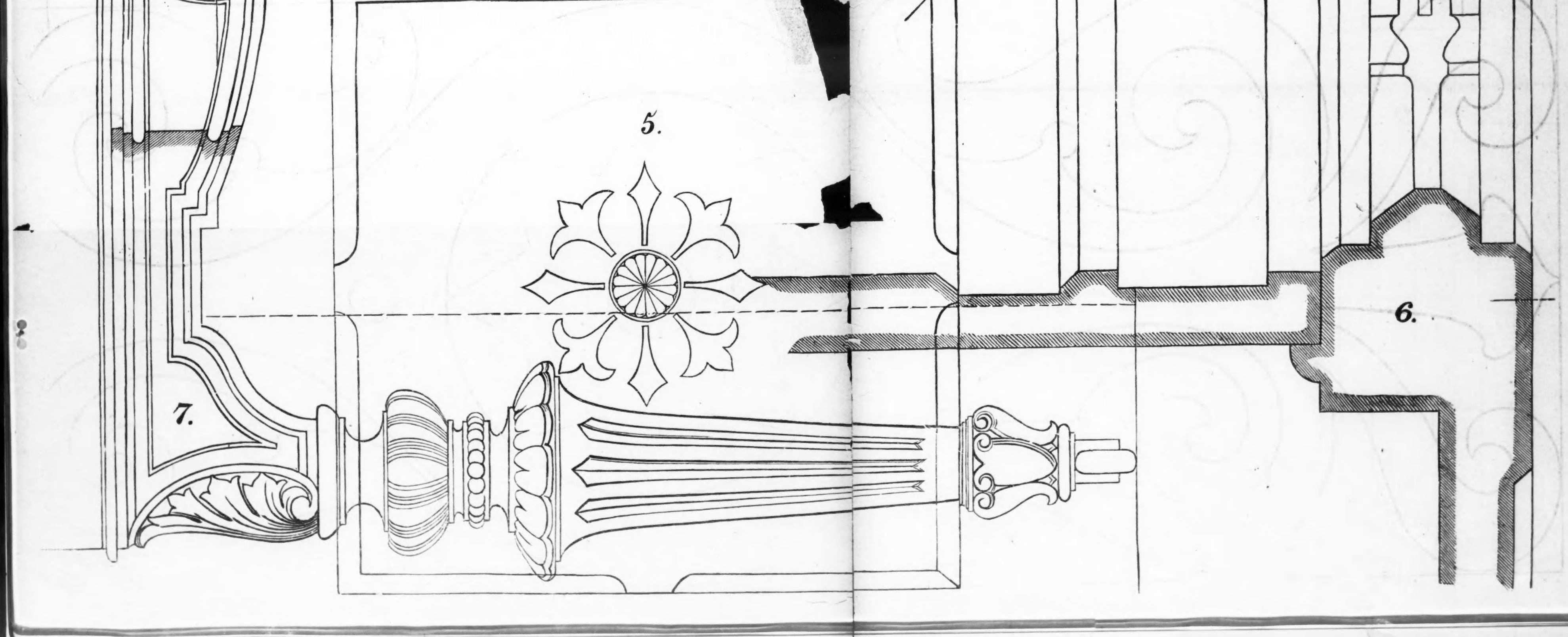
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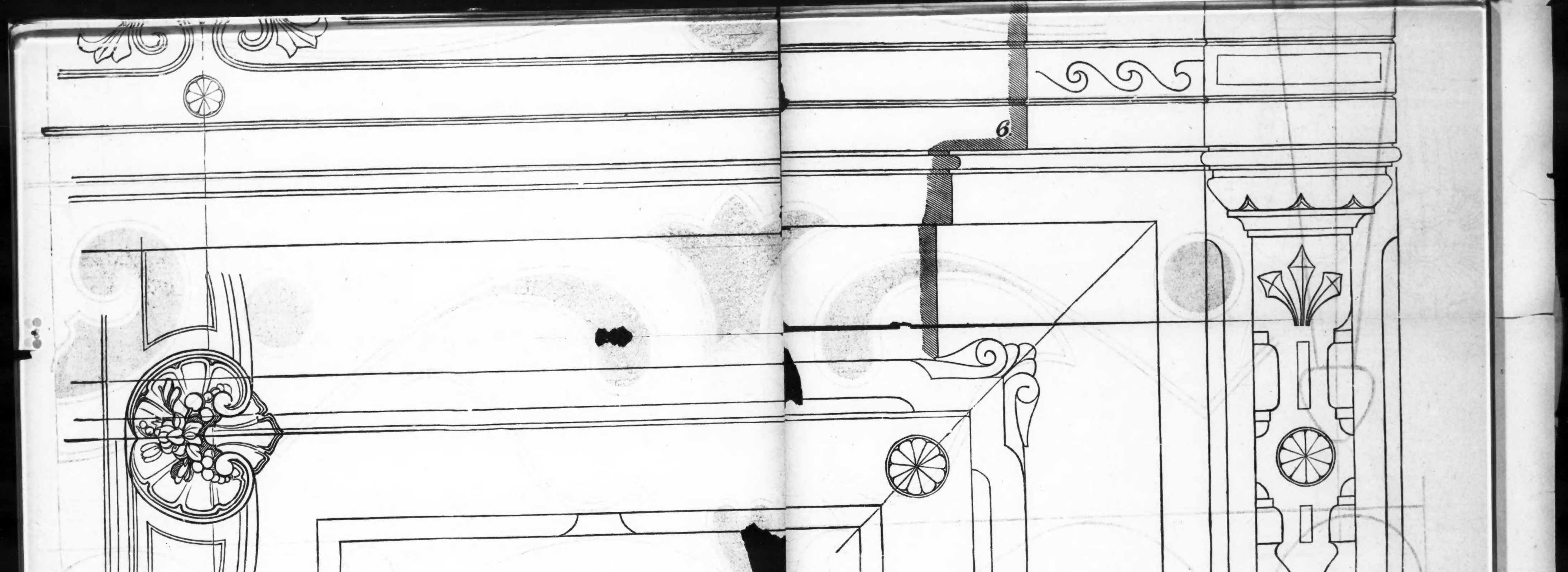
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